

# VI

## René Descartes

THE PHILOSOPHY of René Descartes cannot be rightly understood apart from his own person and life.<sup>1</sup> He himself has deemed it useful to recount for the benefit of his readers the history of his intellectual formation at the Jesuit college of La Flèche and the sequence of reflections that led him to his final philosophical conclusions. Historical information has thrown light on some parts of his narrative. It remains noteworthy, at least, that Descartes' philosophical thought has come down to us inseparably tied up with what he once called "the history of [his] own mind."

### The Method

FRANCIS BACON had not been a very successful scientist; Descartes, on the contrary, began his philosophical career as a very successful mathematician. Despite his exceptional merits, Viète had not clearly put under the eyes of the public the idea of the new mathematical method we now call analytical geometry. This is what Descartes did in his own *Geometry* of 1637; but the main difference between Viète or the other mathematicians like Fermat and Descartes was that mathematics was never to Descartes other than the revelation of a universally applicable method, which means that, over and above being a mathematician, Descartes was a philosopher. In its general notion and in its structure, the whole philosophy of Descartes is conditioned by the fact that it was born of the faith of its author in the universal validity of mathematical reasoning.

The notion of "method" is therefore fundamental in the philosophy of Descartes, not only in idea but in *feeling*. He felt convinced that, once the true method was possessed, the inequalities among human

minds would lose much of their importance; the discovery of truth in all domains would become a question of "know-how." He himself never doubted that, equipped with his method, he would lay down at least the foundations of all sciences during his own lifetime, including even a scientifically founded medicine. His first philosophical publication was quite naturally devoted to this notion of "method." In his own mind, there was no difference between philosophy and methodical thinking. However, a first attempt to define and describe his method ended in failure. *The Rules for the Direction of the Mind* is unfinished. Descartes never said why he had not completed the treatise. But one likely reason is that he found it too long and too complicated as it had developed. A philosophical exposition of the true method had to be very short, or else it would not really itself be *methodical* in Descartes' sense. A second attempt resulted in the *Discourse on the Method of Rightly Conducting the Reason and Seeking for Truth in the Sciences*.<sup>2</sup> This time it was not a question of describing in a detailed manner the operations of a mind in quest of truth, but, in a more general way, the "principal rules regarding the method" which Descartes had discovered.

These rules are laid down in the second part of the *Discourse*.<sup>3</sup> They are four in number. The first is to accept nothing as true which the mind does not clearly see to be so. This abbreviated formula implies three stipulations: (a) carefully to avoid hasty and ready-made judgments (i.e., precipitation and prejudice); (b) in each judgment, to limit assent to that part of its object which the mind perceives clearly and distinctly to be true ("distinctly," that is, as being true of that object only); (c) to carry one's reflections in due order, the due order being that which, beginning with the simplest objects and the easiest to understand, progressively rises to the knowledge of the most complex and difficult to understand, this condition being so absolute that, even in cases when there does not seem to be an order of complexity between the objects, it is necessary to assume a fictitious one; (d) the last rule is, in each and every case, to make at the end of the demonstration a review so complete and so general that one can feel sure that nothing has been omitted.

These apparently simple formulae were laden with metaphysical implications, especially the first one. The decision only to assent to clearly and distinctly perceived objects of thought could not be extended beyond the boundaries of mathematics without assuming that all objects

of knowledge could be so perceived. The assumption was all the bolder as, in Descartes' own terms, clear and distinct apprehensions should leave no room for doubt.

This difficulty has to be removed if one wants to understand the meaning of Cartesian philosophy, and the only way to remove it is to realize in what sense, in the mind of Descartes himself, its method is "mathematical." His discovery of analytical geometry had consisted in substituting algebraic symbols for lines and figures. The certitude and generality of the conclusions obtained by the new geometry were therefore due to the fact that, in it, understanding was operating on signs quite independently from the natures of the things such signs could represent. The only problem then left for the understanding to solve was that of finding the proper order between these signs, or the creation of one where none was found. Descartes knew for sure that this decision had been justified by success in the creation of analytical geometry. He also knew, from personal experience and from that of Galileo, that most arduous problems in astronomy and in physics could be successfully submitted to mathematical treatment. There was one more step to take; namely, to decide that the mind was to treat of all conceivable objects as mathematicians treat those of their own science. Descartes did not hesitate to make that decision. He knew it was a crucial one. At the beginning of his *Olympica* he has even dated it for us: "On the tenth of November 1619, as I was full of enthusiasm and finding the foundations of a marvelous science . . ." November 10, 1619, is the birth date of Cartesian philosophy.<sup>4</sup>

The nature of the admirable science should now be made clear. Descartes did not declare that the human mind is only able to know numbers and figures, as in arithmetic and in geometry; nor did he decide that henceforward all objects of knowledge could and should be given the forms of numbers and figures. Rather, he discovered that all objects should henceforward be handled as if they were mathematical objects, even if they were not so. This is the sense of the passage in the *Discourse*, II, where, right after laying down the four rules of the method, Descartes expressly adds that the "long chains of reasoning," by means of which the geometricians achieve the most difficult demonstrations, had caused him to think that, very likely, "all objects knowable to man" are mutually related in the same way as the terms of those long, but simple and easy, geometrical demonstrations.<sup>5</sup> So we know not only when Cartesianism was born, we also know how it was con-

ceived in the mind of Descartes. It was brought about by those long chains of reasons which "gave [him] occasion to imagine that *toutes les choses qui peuvent tomber sous la connaissance des hommes* follow one another in the same way." *All things*; no exception is made; the order of all things is of the same nature as that of the terms of a mathematical demonstration. The only problem remaining is to find that order in each case and to avoid accepting any demonstration as true in which that order is not made evident.

## The Tree of Knowledge

GIVEN THE CAUSE of the birth of Descartes' notion of science, then, it is evident that Descartes always held a global and unitary view of thought. Since all cognizable objects are knowable in the same way and follow an order similar to that of the terms in a mathematical demonstration, the whole body of human knowledge is necessarily one. To build up such an all-embracing philosophical expression of reality had been the ambition of Francis Bacon in his *Instauratio magna*—an ambition not fully realized; but Descartes thought he had found the proper way to accomplish it. Centuries before Bacon, the encyclopedia of Aristotle had looked like a fulfillment of that dream, but because he failed to realize the true nature of mathematical knowledge, the philosopher had followed an entirely wrong order, starting always from sense knowledge, and always impeded by it, as geometers were before the invention of geometrical analysis, when they hung on to sensations and images, instead of doing away with them to concentrate on the "order of the reasons."

All this entailed an entirely new departure in philosophy. As young Descartes had learned it from the Jesuits at La Flèche, the order of the philosophical disciplines imitated the order of acquisition of human knowledge. Because the mind goes up from sensations to concepts, so also according to the peripatetics the order of the sciences should rise from physics to metaphysics. In a philosophy that proceeds, instead, from clear and distinct notions to the knowledge of all its objects, the order was bound to be the reverse.

This consequence can be observed in the very important Preface added by Descartes to the French translation of his *Principles of Philosophy*.<sup>6</sup> Philosophy is the study of wisdom, which is the perfect



knowledge of all that which man can know in view of the conduct of his life, of the preservation of his health, and of the invention of all the arts and techniques. Such knowledge can only be “deduced from the prime causes, so that, in order to acquire it, which is properly called to philosophize, one must needs begin with the quest for those prime causes, that is for the Principles.” Now such principles must answer two conditions: first, they should be so clear and evident that the human mind cannot doubt their truth (first rule of the method), and, next, they should be such that the knowledge of all the rest is conditioned by them, while their own knowledge is conditioned by that of nothing else (third rule of the method: order). After this, one must strive to “deduce” from those principles the knowledge of the things that depend on them, and this should be done in such a way that, in the whole series of the deductions, there be nothing not wholly manifest. True enough, only God is perfectly wise, for no one else thus owns the entire knowledge of all things, “but men can be said to have more or less wisdom, according as they have more or less knowledge of the more important truths.” In short, whereas the scholastics considered philosophical wisdom as proceeding from things to their principle, and theological wisdom as proceeding from the first principle to things, Descartes conceived philosophical wisdom as an imperfect imitation of theological wisdom, following the same course and proceeding in a similar way.

Thus understood, “the whole philosophy is like unto a tree, of which the roots are Metaphysics, the trunk is Physics and the limbs that spring from that trunk are all the other sciences, which can be reduced to three main ones, to wit: Medicine, Mechanics and Ethics, meaning thereby the highest and most perfect Ethics which, as it presupposes the entire knowledge of the other sciences, is the ultimate degree of Wisdom.”

Such a philosophy—one whose method is inspired by that of mathematics; which considers sense experience an impediment; and which, doing away with imagination, undertakes to deduce the whole body of human knowledge from a small number of self-evident principles and, if possible, from a single one—such a philosophy marks a singular turning point in the history of the human mind. The world, the structure of which Descartes intends to explain, is not to him a product of his own mind; in this sense, his philosophy is a realism. On the other hand, his interpretation of the universe goes from mind to things; it

does so of set purpose; to that extent, then, it shares in the nature of idealism. Those who like labels could perhaps call Cartesianism a methodological idealism, or an idealism of method.<sup>7</sup> Whether, in philosophy, an idealistic method can justify realistic conclusions is of course a problem beyond the competence of mere history. But the history of philosophy proves its usefulness just by raising such questions.

## Prime Philosophy

THE MARKED PREFERENCE of Descartes for the name of "prime philosophy" is now easy to understand. The traditional appellation "metaphysics" was entirely justified because, in peripateticism, the discipline designated by that name really came "after" physics; in Cartesianism, on the contrary, it comes before physics as being the root of all the other disciplines; its properly Cartesian appellation is therefore justified.

Descartes has given four expositions of his prime philosophy: in the *Discourse*, in the *Meditations*, in the *Answers to the Second Objections*, and in the First Part of the *Principles of Philosophy*. The text of the *Meditations*<sup>8</sup> is the most perfect of the four. To follow the thought of Descartes through the six meditations, be it in a summary fashion, is the only possible way to form an idea of what, using the traditional language, we call his metaphysics.

### THE METHODOICAL DOUBT

THE METHOD requires (first rule) that we should accept in our judgments nothing that is not so clearly and distinctly understood that we can have no occasion to doubt it. The First Meditation is an application of that precept. It accumulates all the reasons and pretexts it is possible to find for revoking into doubt certain commonly received notions which philosophers sometimes use as principles in their doctrines.

In doing so, Descartes naturally draws on the supply of arguments heaped up by the skeptics from antiquity till his own day, but this is not because there is any trace of skepticism in his own mind. When he uses a skeptical argument such as, for instance: How do I know that I am not insane? or that I am not asleep and dreaming what I seem to

see? he does not mean to tell us that he really is in doubt of those points. His aim is merely to make us realize that such certitudes as these are not, as they say, *beyond doubt*, so none of them can be the first principle. The usual objection, that Descartes cannot really pretend he does not know whether he is awake or not, is pointless. Of course he knows it; the only question is: Is that knowledge of such nature that its truth cannot possibly be questioned? The answer is, no. If a man looks for something in a basket full of miscellaneous objects, the best way to make sure whether the thing is there or not is for him to empty the basket and to sort its content until he finds what he is looking for. This does not mean that the rest is not good; if it is, it will have its turn, only just now it is not wanted.

The name "methodical doubt" well expresses this deliberate character of the operation. It also accounts for the "hyperbolic" nature of certain reasons of doubting invoked by Descartes; for instance: that I might have been created by some evil genius who employs his whole power in deceiving me (this is called the argument of the *Malin Génie*—the Great Deceiver). The question is not: "Is this true?" but "Granting that it is not true, how can I be sure (by natural reason) that it is not true, at a moment in my inquiry when, since it is its first moment, I have not even proved that there is a God?"

But why all this insistence on showing as doubtful conclusions that men particularly like to hold as certain, not to say sacred?

First, we are so prone to assent to uncriticized judgments that Descartes wants us to bend backward to lose the habit of assenting to prejudice, which is incompatible with philosophical and scientific inquiry. To get rid of it is to get rid of a vice; this cannot be done in a moment, nor without methodic effort.

Secondly, this training in the practice of scientific method is so different from skepticism that its ultimate aim is to eliminate, once and for all, the skeptical prejudice that certitude does not exist. If Descartes succeeds in his undertaking, Montaigne will have been beaten at his own game. The skeptics insist that sense knowledge is deceitful. They are right. The greatest single cause of errors in philosophy precisely is that we take the testimony of sense at its face value. The methodical doubt sets out for us a very effective way to detach our mind from the senses and thus to get it fit for a truly mathematical and philosophical speculation.



## THE FIRST PRINCIPLE

DESCARTES IS LOOKING for the first principle. Such a principle must exhibit two properties: In order to be a principle, it must be self-evident, and in order to be first, it must be such that, without itself being deducible from anything else, it can lead to the knowledge of all the rest. The objection that the first principle is being as such is irrelevant from the point of view of Descartes. From the abstract notion of being, nothing at all can be inferred. What Descartes calls the first principle is the first known object of knowledge which, being known and dealt with according to the exigencies of order, will make possible the knowledge of all the rest. The principle to be found is that of a science of the real, not that of a logical deduction.

Is there anything I remain sure of even while doubting of all the rest? Yes, my own existence; for if I doubt, I think, and if I think, I am. At least this is what I say if I am asked how I know that I am. My answer to such a question necessarily assumes the form of a reasoning, but there is no reasoning in the judgment whereby I grasp my own existence in my very act of doubting. *Que sais-je?* (What do I know?) Montaigne asks. Montaigne knows at least this, that he is, otherwise he could not even ask the question.

Let us therefore start from this initial certitude: "I think, hence I am." Now this is for us the time to remember the first rule of the method: to accept nothing more in my judgment than what is presented to my mind so clearly and distinctly that I can find no occasion to doubt it. In the present case, what is there in my judgment that cannot possibly be doubted? There is this, and this only: that I am, and since I know I am because I know I think, the only kind of being I can claim for my own is that of a thinking thing. I therefore know that I am and, to some extent, what I am, but if I do not want to admit anything that is not necessarily true, I must confine myself to saying that "I am, precisely speaking, nothing else than a thing that thinks; that is to say, a spirit, an understanding or a reason." This is real knowledge, for indeed "I am a true thing, and a truly existing thing," but if I am asked what kind of thing I am, my only answer is: "I already said it: a thing that thinks."

Attention must be paid to the clause of Descartes' answer: as far as I know at present, I am but a thinking thing. It follows from there that



I am nothing else. At least, if I am anything else, I am not aware of the fact. Am I what is called a "human body"? Perhaps, but just now I know nothing about that. I know that I doubt, that I reason, that I will, that I imagine; I know all these things because to doubt, to reason, and to imagine is to think. But I do not know that I am a body, or that I have limbs, or that there is outside me such a thing as what they call extension according to the three dimensions of space. I am not denying the existence of those things; my only point is that, at the stage of my reflections I now have reached, I have no reason to judge that they belong to my nature, nor even that they actually exist. To conclude: I think, hence I am, is evident; I think, hence I have a body, is not evident; let us therefore affirm the first of these two propositions and refrain from affirming the second one.

Summing up this Second Meditation, Descartes himself says that it teaches us two things: First, that even if I make free to deny the existence of all those things of whose existence I have the least doubt, it nevertheless remains impossible for me not to recognize that I exist. Secondly—and this point is of great importance<sup>9</sup>—I have learned to draw a distinction between the things which pertain to the nature of a thinking thing—that is to say, to mind—and those which pertain to body. Even though I were the toy of some deceiving genius, he could not deceive me in this, for if I am deceived, I think, and if I think, I am an existing thinking thing, Q.E.D.

#### OF GOD: THAT HE EXISTS

SO FAR, the knowledge I have of myself as mind does not permit me to affirm the existence of another being besides myself. I do not know I have a body; I am not even certain there is such a thing in the world. On second thought, however, I realize that the knowledge I have of myself as mind necessarily implies another judgment; namely, that there is a God.<sup>10</sup>

Indeed, the thinking act that enabled me to grasp my own existence was an act of doubting. In order to know I was doubting, I must have had the notion of what my cognition was lacking for it to be a certitude; so I was discerning the imperfect from the perfect; now, in order to see this distinction, I must first have had the notion of perfection. Whence did that notion come to me? Since it is clear and distinct, it has an object in the mind, and although an object in the mind has not

the same reality as the same object outside the mind, one cannot pretend it is nothing. This "objective reality" of the clear and distinct notions—that is to say, their reality as containing a real object of thought (which is not the case of obscure and confused ideas)—is the very basis of Descartes' proof of the existence of God from his effects.

For indeed, if our notion of perfection has any objective reality, it is something. According to the principle of causality, there is nothing without a cause; hence my notion of perfection has a cause. Moreover, it follows from the same principle that there cannot be more in the effect than there is in the cause (otherwise that supplement of reality would have no cause); the problem then is to discover a cause of the notion of perfection that contains as much reality as is represented by the notion. I cannot be that cause, since I am grasping my own existence in an act of doubting, which involves imperfection. Only a perfect being can be such a cause, and since God is the name we use in order to signify a perfect being, it is evident that God exists.

A first remark on this demonstration. Such as it is found in the Third Meditation, it offers a perfect sample of what Descartes called a chain of reasons similar to those used by the geometers. This can be shown by submitting it to the acid test of the fourth rule. Let us enumerate and review its moments. God exists; why? Because I can think of no other cause of the presence of the notion of "perfect" in my mind. How do I know that notion is there? Because I realize I am doubting. How does the notion of "doubt" involve that of perfection? Because to doubt is not to be certain, a fact I would not notice if I had not the notion of perfection in knowledge present to the mind! How am I sure I really am doubting? Because doubt was the very act of thought that propelled me to discover that if I think, I am. Going over the whole chain of reason, I finally grasp it, so to speak, as a simple intuition. At first I was saying: I think, hence I am; I can now say: I doubt, hence God is, which is tantamount to saying: I think, hence God is.

A second remark is that this first proof of the existence of God is calculated to fill up the place of the traditional proofs taken from the effects of God (the so-called *a posteriori* demonstrations). But, since Descartes cannot assume the existence of an external world, which he intends to prove in the Sixth Meditation only, he cannot base his demonstration on the fact that there is a material world subject to change. Nevertheless, it is his intention to comply with the teaching of St. Paul (*Rom. 1:20*), that God can be known *a creatura mundi*; that is to say,

from the things he has created. For indeed man is such a creature; his mind is likewise a creature, and if there is in man's mind an objectively real notion of perfection, that objective reality, too, is a creature. This is what Descartes recalls to the theologians of the Sorbonne in the Dedicatory Letter prefixed to his *Meditations*. Moreover, he himself notes now, his very method complies with the injunction of the Apostle. Arguing as a theologian, from Scripture, Descartes adds: "Again, by what is said in the same passage, to wit: *That which is known of God, is manifest in them*, we seem to be warned, that all that which can be known of God can be shown by reasons which we need not seek outside of ourselves and which, taken in itself, our mind is able to provide to us." It seems, then, that Thomas Aquinas did not pay enough attention to this *in illis* of the Apostle. Just as Galileo in his *Letter to the Grand Duchess Christina*, Descartes is explaining Scripture to the theologians.

There is another—and very important—point. By establishing the existence of God as the cause of man's notion of perfection, and since there must be in the cause at least as much as there is in the effect, Descartes has proved that God is perfect. Now to deceive is a mark of imperfection. God therefore is not a deceiver. This eliminates the "hyperbolic" skeptical argument by the possibility of man being created and constantly misled by some "Great Deceiver." The last skeptical doubt as to the validity of rational knowledge has thus been removed.

#### OF THE TRUE AND THE FALSE

I AM NOT being deceived by God; still I am often deceived; how is this possible? God has not created man with such a nature that error be for him unavoidable (otherwise God would be a deceiver), but he should not have created him exposed to error. In short, man is not infallible; is not God responsible for the fact? The Fourth Meditation removes this difficulty.

God cannot be blamed for producing an imperfect creature, for the very nature of created being implies that it is finite and imperfect. The question is: Does the kind of imperfection proper to man on this point necessarily condemn him to commit errors? In order that there be error, there must be judgment. Taken in itself, an idea is neither true nor false; it becomes true or false when I affirm it or deny it of another one; thus to associate and dissociate ideas is to judge. To affirm or to deny is the proper act of judging. How are judgments possible?



Were understanding the only faculty of my mind, I still would perceive ideas, which is the very function of understanding; but I could not associate and dissociate them in order to form judgments. To account for the possibility of judgment, one must resort to a different faculty, which is the will. Every act of judging thus presupposes ideas perceived by understanding and a will that affirms them or denies them. When the will affirms only that which understanding evidently sees to be true, there can be no error; on the contrary, there always is error when the will affirms or denies that which understanding does not perceive clearly and distinctly. Things being so, man has nothing to complain about. His will is free; because it is free, it can judge in the absence of evidence and thus be mistaken, but the very same freedom enables it to avoid ever judging in the absence of clear and distinct knowledge, so that, if man does judge precipitously, he is, absolutely speaking, responsible for his errors.

This is actually in what man's liberty really consists. He has free choice, since his will is always able to will or not to will, but this always open possibility (liberty of indifference) is not itself liberty.<sup>11</sup> True liberty consists in using free choice only to affirm as true that which is true and to choose as good that which is good. Ethics is here at one with the first rule of the method: The perfection of liberty consists in never assenting to that which understanding does not clearly and distinctly perceive to be true. The responsibility for our errors therefore truly rests with ourselves; we are fallible because we are creatures, but it lies in our power never to be mistaken.

#### SECOND PROOF OF GOD'S EXISTENCE

THUS ASSURED that true judgments are possible in themselves and always in our power, the mind makes a first attempt to get out of itself and out of the realm of spiritual beings. Already in the Second Meditation the idea of body and that of extension offered themselves to the mind's examination. The conclusion then was that, in the last analysis, a piece of matter, such as, for instance, a piece of wax, is to my mind nothing else than what I know about it. Nevertheless, on reflection, I realize that, besides the clear and distinct ideas of mind and God, there is in me still a third one; namely, that of extension such as it is defined by geometers. It assuredly is clear and distinct, since thought can distinguish in it several figures endowed with necessary geometrical prop-

erties which we have no other choice than to attribute to them. Can it be proved that extension exists?

Descartes is here out to prove the existence of the external world of matter, but the very thought of geometrical extension causes him to change direction and to make tracks for a second demonstration of the existence of God.

What confers upon geometrical figures, such as triangle and circle, the character of certitude and necessity which geometers attribute to them? It is precisely that, in geometrical demonstrations, the mind affirms nothing of those diverse figures beyond that which it perceives as belonging to them with necessity. Now, if we examine the idea of God, which has been seen to be that of an absolutely perfect being, we shall realize that existence belongs to such a being as necessarily as their own properties belong to triangles or to cubes. And indeed there is contradiction in thinking of the supremely perfect being as deprived of such a perfection as actual existence; consequently, God is, or exists.

This argument calls for two remarks. First from the point of view of history. Just as the preceding proof of the existence of God was a re-interpretation of the traditional argument based on the principle of causality, this second one is a reinterpretation of the famous argument of St. Anselm in his *Proslogion*. The scholastics were divided in their preferences, some favoring the *a posteriori* way of Thomas Aquinas, others preferring the *a priori* way of Anselm, proceeding by an analysis of the notion of God; Descartes shows that his metaphysics justifies both methods, which, to him, was one more proof of its superiority.

The second remark is philosophical. The casual way in which Descartes introduces his second proof, as though it were on the occasion of an altogether different problem, that of the existence of matter, surprises at first in a philosophy where the order of the reasons reigns supreme. In point of fact, Descartes is here proceeding in an orderly way. The order of the reasons cannot be, in Descartes' doctrine, of the same nature as in a philosophy inspired by the logic of Aristotle. It does not deduce, in a linear way, from the general to the particular. The Cartesian order of the reasons is imposed by the very nature of its objects. In the present case, it is only natural that the metaphysician should be reminded of the existence and nature of geometrical objects at the very moment he turns to extension in order to ask the question of its existence.

Having reached this conclusion, Descartes feels at last free to pro-

ceed with the examination of an infinitude of objects that are neither God nor the mind; namely, material objects. But do such objects exist?

#### THE MATERIAL WORLD AND MAN

THE EXACT TITLE of the Sixth Meditation deserves attention: *Of the existence of Material Things, and of the real distinction between the Soul and Body of Man*. Descartes could not say more clearly and explicitly that the distinction of soul and body receives its complete demonstration in this meditation only. Moreover, it calls our attention to the fact that, in order to prove the *real* distinction of mind and body, one must first establish that material things exist.

There is something amazing in the confidence betrayed by the first sentence of the Sixth Meditation: "Nothing now further remains but to inquire whether material things exist." Is there, outside my mind, an actually existing extension answering to my idea of it? Here again the method forbids us to conclude the actual existence of the external world from any other thing than the content of our own thought. We started from the *I think*, we are still in it, and it is within it that we must find a way to get out of it. The moment is an important one for the history of philosophy. We are now witnessing the first attempt to *demonstrate* the existence of the world. Innumerable philosophical consequences will follow from it.

Extension first offers itself to the mind as an *idea*. It is the very same notion which provides geometry with its object. Inasmuch as it is intelligible, that idea is not necessarily tied up with imagination. This can be seen from analytical geometry, which, doing away with images, appeals only to the mind. Now from the mere idea of extension nothing can be concluded as to the actual existence of its object. The idea of a non-existing God is an absurdity, and it is not absurd because the mind finds it to be so; on the contrary, I know that God exists because the intrinsic necessity of an existing God forces upon my own mind its own necessity. No such thing happens with extension. I find no contradiction in thinking of a non-existing extension. In fact, the extension which is the object of geometry does not actually exist, so its idea provides no way out of the mind.

The *image* of extension is also contained in my mind. The easiest way to account for its presence would be to suppose that my mind is united to a body so that, by applying itself to it, imagination could form its



image. This is a possible explanation, but we decided (first rule) never to assent to any conclusion in which understanding could find the slightest occasion to doubt. Now it is not evident that, by itself and without a body, mind is not able to form such an image. Taken as the object of traditional geometry, the image of extension provides an excellent object for scientific knowledge. This is seen from the geometry of Euclid. Since it is not absolutely evident that mind cannot form images, the image of extension in it is no proof that extension exists outside it.

Nothing else now remains to be accounted for in the mind but *sensation*. Indeed, the sensations of color, heat, weight, etc., are likewise thoughts, so their existence in the mind demands to be explained. This time, however, the situation is different. Unlike our idea and our image of extension, sensations are confused and obscure. They exhibit no intelligible content to the mind. This would not be if they were produced by mind only. Taken in itself and apart from any other thing, thought should normally contain nothing that is not intelligible; that is to say, clear and distinct. That there is in thought obscurity and confusion can only come from the fact that its substance is altered by a substance foreign to its nature. It even must be tied up with that substance intimately enough to account for the deep modification its content undergoes in consequence of its union with it.

The mind then must be united to a body, because otherwise the existence of such thoughts as sensations could not be accounted for.

Now this union is a fact which is experienced as such. I know that sensations do not originate in the mind alone because, unlike ideas and even images, they are not in our power. They come unexpectedly and, when they do come, it does not rest with us to perceive them or not. Hence, in every man, an irresistible propensity to consider sensations as coming to us from actually existing external objects. This is not a belief; it is an immediately given experience, of which the evidence is such that, were we deceived in this, God could not be excused from the reproach of being a deceiver. Since he is not a deceiver, it is certain that God has so constituted man that the movements caused in our nerves by external objects modify definite portions of the brain by which, in virtue of its union with the brain, mind is so affected as to produce the kinds of thoughts we call sensations.

There is therefore, outside of mind, a world of matter with one particular portion of which it is united. This union is a substantial one, so

that, in the last analysis, there are three diverse orders of substances: mind, extension, and the union of mind and body,<sup>1</sup> which is man. It is noteworthy that, in this philosophy, the real distinction of soul and body cannot be demonstrated except through the demonstration of their substantial union. Sensation proves their union; for this union to be real, body must actually exist, since mind cannot be really united with a non-existent; consequently, the very demonstration of the substantial union of mind and body is, by the same token, the final proof of their real distinction. Thus is explained the otherwise paradoxical title of this Sixth Meditation, which I beg to recall: *Of the existence of Material Things, and of the real distinction between the Soul and Body of Man.*

The problem raised by this conclusion was to occupy some very great minds during the whole seventeenth century, and later.

## Natural Philosophy

METAPHYSICS IS THE ROOT of the Tree of Wisdom. Physics is the trunk of the tree. How does the trunk grow out of the root?

The last conclusions of metaphysics, or prime philosophy, are the prime principles of physics. The latter studies the world of bodies; now metaphysics has just defined the object of physical research with perfect precision; nothing further remains for physics but to accept it.

Prime philosophy is loosely said to prove the existence of the external world; it only proves the existence of extension and nothing more. Without the union of mind and body, as well as the confused thoughts that follow from it, the actual existence of the world of bodies could not possibly be proved; but the only clear and distinct idea we can form of that world is that of extension, along with that of motion, which is but the series of places occupied in space by one and the same body. Now extension and its modes are the only things whose actual existence we have demonstrated; moreover, they are the only notions related to the external world which we can clearly and distinctly conceive; they are therefore the only things that can possibly be the objects of physics.

Hence three important consequences:<sup>12</sup>

In the first place, the physics of Aristotle is completely eliminated,

because the foundation upon which it rests is overthrown. According to the peripatetics, every body is a substance composed of two elements: a form that defines its nature and confers upon it its specific properties, and a matter that provides for the form a subject in which to subsist. In order to account for the properties and operations of any being, the physics of Aristotle simply attributes to it a form that is supposed to be the cause of such operations and properties. This illusion of the Aristotelians can be accounted for; still it remains an illusion.

Descartes will admit in nature one case, and one only, of a body joined to a form with which it constitutes a substantial unity; it is that of our own body, of which the form is our soul. From early infancy, man experiences in himself what it is to be an animated body, which its form moves and directs in its operations; by a spontaneous, though illegitimate, extension of this human experience, men imagine that what is true of their own body is also true of all the other ones. Hence they supposed that there was in each and every body an internal principle of growth and motion, which is its "form." Hence the physics of Aristotle, in which all bodies are conceived as analogous to the human body, endowed with kinds of souls which we call "forms." Aristotelianism in physics is a barely disguised universal animism. What prime philosophy teaches us, on the contrary, is that soul is really distinct from body, so that, outside of thought, nothing exists but extension and its modes. The notion of substantial forms is thus destroyed; the traditional explanation of physical phenomena disappears along with it; the way is open to a purely mechanistic interpretation of the material universe. The world of modern science has now found its definition.<sup>13</sup>

The second consequence following from the new prime philosophy in the order of scientific knowledge is that, since the new universe is nothing but extension, it must possess all the attributes of extension, and no other ones. This completely transforms the traditionally received view of nature. In the first place, matter becomes an entirely intelligible notion. In the philosophies of Plato and Aristotle, the notion of matter represented what there is of the accidental and irrational in reality; it symbolized that which, in things, remains impervious to the mind. Henceforward, since it now is identical with extension in space, which is the object of conventional geometry, it becomes just as fully intelligible as space itself is; answering, as it now does, the more exacting demands of mathematical demonstration, physics, which has matter for its object, ceases thereby to be a dialectic that stops at probabilities.



As extended matter itself, it becomes the proper domain of necessity.

There is more. Because of this same identification of matter with extension, it will become possible to deduce *a priori* the main characteristics of the universe. Since the universe is extension in space according to the three dimensions, we can be sure that it exhibits all the essential properties of extension itself. Space is indefinite, since, in thought, space can be limited only by another space; hence, since it is space, the world is indefinitely extended. For the same reason, the world is full and there is no void in it; for indeed, space is a continuum, so an empty space would still be space. Again, space is indefinitely divisible, since there is no particle of space, however small, that we do not conceive as susceptible of being still further divided: hence matter is indefinitely divisible and there are no indivisible atoms like those imagined by Lucretius. Generally speaking, it suffices to know the properties of geometrical extension in order to know those of space, and thereby of matter; since our only clear and distinct idea of it is that of geometrical extension, we can feel sure that the world of nature contains all that which is contained in it, and nothing else.

A third series of consequences following for physics from metaphysics is that the nature of physical laws is previsible from what we now know of the nature of God. The Supreme Being whose existence is demonstrated by prime philosophy is not a mere "author of nature," very powerful, yet finite. The Prime Being is a God worthy of the name; that is to say, a perfect being, truly all-powerful, creator not only of nature but of the very laws of nature, including those of mechanics and mathematics. There are no such things as the so-called eternal laws, which philosophers consider binding for God himself. That could not be. Our understanding is finite; all that which it comprehends is bound to be also finite; consequently, it cannot be binding for an infinite God. The contrary illusion comes from our habit of thinking of God as a sort of superman, more intelligent and more powerful than we are, but endowed as we are with an intelligence and a will. Hence the common temptation to guess the hidden reasons why he has made things such as they are. The naïve hunting for final causes, besides being useless, has no object. Since God is infinite, he is simple; there is in him no distinction, even of mere "reasoned reason," between what we call understanding and will. The universe is just what God made it to be; the physicist has not to ask himself any "why": his only task is to describe it such as it is.

## The Cartesian World

LET US SUPPOSE a free and infinitely powerful God who is also a perfect God; we cannot ask *why* he is going to act thus rather than otherwise, but it is permitted to ask *how* he will act. One of the most obvious characters of his action will be immutability. God then can only have created an extended matter, endowed with a certain motion, of which the quantity remains constant, and which is continually transmitted from one part of extension to another according to laws themselves constant and simple.

This principle being admitted, the fundamental laws of nature can be deduced from it: (1) every thing remains in the state in which it is as long as nothing acts upon it to modify it; (2) every moving body always tends to continue its motion in a straight line; (3) when a body impels another, it cannot impart to it any quantity of motion without losing an equal quantity of its own, nor can it take from it any quantity of motion without its own being increased by so much. What is remarkable is that, according to Descartes himself, these rules evidently follow from the fact that, being immutable and acting always in the same way, God produces always the same effect. At any rate, it is possible to deduce from these three mechanical laws all the calculations that permit us to foresee how the motions of two bodies will be modified in consequence of their shocks. In other words, it is possible to deduce from the true notion of God all that which is intelligible in the reciprocal actions of natural bodies.

Let us then suppose that God has created one single sort of matter, indefinitely divisible, actually divided into a very great number of particles and quickened by a constant quantity of motion transmitting itself according to these three laws; all the parts of matter will be seen to take up certain figures. The principal of these figures are three in number: corpuscles of irregular and angular shape; corpuscles of round shape, remnants of the preceding ones progressively polished by countless shocks; then exceedingly thin and rare corpuscles, a kind of powder caused by the wearing of the preceding one and which fills up the intervals between the angular particles and the round ones. Such are the three elements of which the universe is composed and by which it is mechanically produced.<sup>14</sup>

In a universe where, because matter is pure extension, a void is impossible, the only possible form of motion is that of vortexes, no particle being able to move unless the immediately preceding one be moving in front of it. The third and powderlike element is animated by an extremely rapid vorticular motion, thereby producing the sun and the fixed stars. The round element, animated by a less rapid motion, produces the heavens. The angular and irregular element, moving more slowly, causes the earth, the planets, and the comets. All bodies observable in nature can be accounted for by these three elements and by the laws according to which they move in space; and not only inorganic bodies, such as minerals, but organized bodies as well, such as plants, and even those we wrongly call animated, such as animals. Descartes says "wrongly" because living organisms must be explained, like all the rest, by certain combinations of material particles following the laws of motion. The notion of "soul" has no part to play in this kind of explanation. Living organisms are automaton, mere machines similar to clocks with exceedingly complicated wheels. Naturally, this is also true of the human body, for all those of its functions that escape the control of will.

Thus the whole physics of heavenly bodies, of the terrestrial bodies as well as that of the living bodies is finally but a *mechanics*, whose fundamental laws are deduced from a *metaphysics* which itself is *mathematically* evident. The method remains the same from one extremity of human knowledge to the other. Nevertheless, when the question comes up of explaining the detail of phenomena, an auxiliary method is required: one must resort to experiment.

The reason given for this is eminently typical of the Cartesian spirit. In a physics that grows out of metaphysics and makes use of universal mathematical method, the principles are so ample and all-embracing that there is nothing that cannot be deduced from them. From extension and motion it is possible to deduce all that which is, plus all that which could be. The difficulty, then, is not to explain that which exists, but, rather, it is to know what does actually exist, before undertaking to explain it. Observation and experiment only can make us know, from among an infinite number of possible combinations, which ones have been actually realized. Nor is this all. Once we know that a certain combination has been realized, several diverse explanations of the being at stake remain possible, because we can then imagine several dif-



ferent mechanical combinations according to which the same effect could have been produced. The explanatory power of the method is such that it extends, beyond the real world, to possible ones. Experiment must therefore intervene again in order to determine, among the possible causes of a certain phenomenon, which is the real one. The only possible way to *explain* a fact is to deduce it from its causes; the scientist resorts to experiment in order to prove that, among different explanations equally possible, one is in fact true.

## Ethics

THE CARTESIAN TREE of philosophy was to flower, according to the original plan, into a mechanics, a medicine, and a "morale." Descartes, before his rather early death, had made considerable contributions to the first; his contributions to the second, hampered, he always complained, by the lack of a National Science Foundation to provide funds for experimentation, were more quaint than truly helpful, even though he attached great importance to the search for ways to assure the body's health, on the grounds that the soul should not be encumbered in the pursuit of happiness by its illnesses. The ethics was to come last of all, as a crowning achievement. Their great absorption in study of the universe did not keep seventeenth-century thinkers from being equally concerned with the human character. If we are to judge by the dramas of Corneille and by the religious revival in the French Catholic Church,<sup>15</sup> Descartes lived in times that were morally earnest indeed. As for himself, he desired that his entire philosophical quest should result in illuminating our nature so that we might conduct ourselves surely and knowingly toward our true end. Descartes was only fifty-four when Queen Christina of Sweden called him out for the seventeenth-century equivalent of an eight o'clock class, resulting in his catching a fatal pneumonia. The formal moral treatise had not yet been written. But since the philosopher had been working toward this goal all his life, he has left important indications of what the main lines of such an ethics should be. With the help of letters to his royal patron, we can deduce its main principles from the true metaphysics and the physics. Then there is the code of "provisional morality," provided in the *Discourse* as a guide for life to be followed while the way

is being made straight for the definitive scientific ethics. And finally, there is the important scientific study of the passions, the last work Descartes ever wrote.

#### MAXIMS FROM THE PROVISIONARY ETHICS

ETHICS is concerned with the detail of our judgments and of our acts. The maxims of the provisional ethics, despite the fact that they were included in the introductory *Discourse* and seemed destined to disappear when a definitive ethics was finally achieved, are enlightening in this regard. When we reread the four maxims in the light of Descartes' maturest thought, we see that they were in fact cleverly cast to retain a basic validity even for the final wisdom. The first maxim prescribes that one adhere to the laws of one's country and be guided by faith and the example of wise men. In this regard, it might help to add another remark. When Descartes opened the *Discourse* with the statement that, of all God's gifts, *le bon sens*—good sense—was the most universally distributed, he was not being ironic, even though the "proof" he offers for his declaration is clearly so; to wit, that no one ever complains that he has not enough of it! Those who accuse Descartes of conformism for having urged adherence to the laws and customs of one's country and to the "middle way" that skirts all apparent extremes are just as wrong as those commentators who think that because he was a revolutionary in philosophy Descartes must have also been a kind of forerunner of Robespierre. The remark made earlier in regard to the methodic doubt holds here. In setting aside all the truths that did not meet the acid test of absolute, mathematically conceived certitude, Descartes did not intend that they should be definitively junked. One often forgets that from the moment he decided as a young man upon his great enterprise of philosophical reconstruction Descartes set out on a search for varied experience among the great men and the courts of all Europe, a search that was to last nine years. It is not in fact untrue to say that Descartes espouses in detail the morality accepted on the grounds of common sense and religious faith by the majority of great men of his time.<sup>16</sup> He would ground that morality scientifically; he would nurture it from the deep roots of metaphysics and have it draw its strength through the solid trunk of the physics he has just elaborated. In a word, he would have the ancient wisdom

flourish in new soil, not be uprooted and die. It is in this spirit that we should understand the first maxim.

There is one other essential point in the definitive ethics established in the provisional code; that is the need for *resoluteness*. To some it has seemed strange that the author of the methodic doubt should have counseled what almost appears to be a stubbornness in action precisely when we lack the light to know certainly what we are about. Actually, the counsel to resoluteness is a perfect pendant to Descartes' scientific attitude, if it is rightly understood. The philosopher was under no illusion about the impossibility of extending the reign of certain knowledge to every moment of our activity. Yet he realized that the same firmness of will had to be present throughout any course of action as throughout the course of theoretical inquiry. Even though we discover the limits and uncertainties of our lights, it still remains true that nothing can be accomplished in the order of action without *follow-through*. This resoluteness in no way invites stubbornness. Descartes is not suggesting that we persist in doubtful ideas, but in those actions which we must at any time launch according to the best lights then in our possession.

#### THE TREATISE ON THE PASSIONS

BY FAR the most extensive preparation for the ethics is that last great *Treatise on the Passions*. Descartes' purpose in scientifically studying the passions as the final preliminary to the formal study of ethics is quite simply stated. The soul may possess firmly its own province, but man is more than a soul; Providence has joined the soul to a body and placed man in a world of extended things in which he must make his way, find his food, avoid mortal dangers, and seek those pleasures that make this life bearable. The soul, acting as will, can move the body; but the body, too, can make its demands felt on the will.<sup>17</sup> The actions of the body are received in the soul in the form of passions. Although they elicit the will, it remains the will's task to be their master. In order to exercise full control, the will and reason need to know as much as possible of their subjects and of the arms at their disposal. The *Treatise on the Passions* is intended as a contribution to this end.

An example can help us understand the "movements" involved in a



typical passionate experience. If I suddenly see a hungry tiger on the loose, I grow tense, cold, and start to tremble, and I find, without any need on my part to send out specific voluntary commands, that my body, before I know it, is halfway up the nearest tree. As Descartes sees it, my reaction unfolds on the bodily level as automatically as the sheep's flight before the wolf, except that its reverberations are felt in the soul in a way that opens the possibility of a potential voluntary intervention in the midst of the process. In its bodily genesis, the fright is caused by an impression "having a close relationship with the things which have been formerly hurtful to the body," so that the imagination associates the image with the previously experienced pain. The reaction that is linked with this concrete sense estimation in the brain will not be the same in every human body; it will vary according to the different "temperaments" and depending on the different "strengths of soul" of the individuals affected. Through the notion of temperament Descartes wishes to introduce the element of different physiological constitutions and, through the notion of "strength of soul," the element of different habitual dispositions in the brain caused by varying degrees of command of the individual's will over the body in the past. Before the will has a chance to intervene, the brain will have been setting into motion the various physical changes in the body which accompany, according to temperament, the frightful apparition. The legs will perhaps be commanded to prepare for flight and the heart to pump to the brain the rarefied blood, or animal "spirits," which, coursing to the pineal gland directly in the middle of the brain, and being "adapted for the maintenance and strengthening of the passion of fear," will affect the soul, eliciting it to throw the weight of its command behind the mechanism of the fear reaction.<sup>48</sup> The will, however, cannot be constrained by this bodily, material elicitation; the will's desires remain "absolutely in its power, and can only be indirectly changed by the body," which makes it possible for the will to seek to countermand the movements of fear being sent from the brain.

If it seeks to do so, the will must carry out its countermanding on the passions' own level. The will has, as it were, to fight fire with fire. It must, by the originaive action of its desires, cause a countermovement in the body, which it can do only by commanding the imagination center of the brain to present an image capable of provoking an equally strong, and contrary, movement in the body. "Thus, in order to excite courage in oneself and remove fear, it is not sufficient to have

the will to do so, but we must apply ourselves to consider the reasons, the objects or examples which persuade us the peril is not great.”<sup>19</sup>

If man were a disincarnated *cogito* this would of course not be necessary. But the whole point of the *Treatise on the Passions* is to deal with the fact that man is a composite of body and soul, that each is a real principle, each works on and through the other.

It is the body's job to present to the soul the demands of material existence, which means that it must hold before the mind's eye the material realities in a way that reproduces in the soul the duration that is characteristic of things in time.

The utility of all the passions consists alone of their fortifying and perpetuating in the soul thoughts which it is good it should preserve, and which without that, might easily be effaced from it. And again all the harm which they can cause consists in the fact that they fortify and conserve these thoughts more than necessary, or that they fortify and conserve others on which it is not good to dwell.<sup>20</sup>

And again, “the customary mode of action of all the passions is simply this, that they dispose the soul to desire those things which nature tells us are of use, and to persist in this desire . . . disposing the body to the movement which serves for the carrying into effect of these things . . .”<sup>21</sup> When the body receives an impression and then magnifies it through all the movements of the bodily resonance, this keeps the reality present to the soul the time necessary to set into motion movements originating in the free desires of the will.

Composite man is then the seat of continual strife; but tradition was wrong to conceive of this strife as a fight between the higher and lower parts of the soul, for a simple, spiritual substance has no parts; nor even, properly speaking, between soul and body, *l'ange et la bête*, for what the good man does in this life is done in part through the body, and the body is the source of great and legitimate pleasures. Rather, the strife is a question of imposing the discipline of order among the parts of this composite. It is the problem of the soul to handle properly the bodily mechanism, through the use of the proper mechanical methods.

In its struggle to gain sure control, the soul enjoys excellent weapons. First, consider its right to command: Its great strength is its knowledge and, to employ the key word of the “provisionary morality,” its

*resolution*, to see that life will be employed to pursue what it knows to be ultimate goods, through "firm and determinate judgments respecting the knowledge of good and evil, in pursuance of which it has resolved to conduct the actions of its life."<sup>22</sup> It must exercise this right in a way that respects the realities of the body, and when it does so, many are its levers of control.

Certain objects have a natural propensity to incite certain passions. But already on this most primitive level of the body's operation the soul can intervene and separate the object, to some extent, from the passion it normally incites, attaching it through *habit* to another. Descartes illustrates this with the homely example of training a setter so that instead of obeying a passion to run upon sight of the quarry, he now will stand perfectly still and set. Habit is a powerful weapon of the will, a most effective way of playing the body off against itself. The first time the will forces the body, in the presence of a certain object, to consider a course of action other than the natural one, it may be very difficult and require much ingenuity of the imagination to produce the right "objects and examples." But once this is done, "traces of the passage of the animal spirits" associated with the desired dispositions are left in the brain,<sup>23</sup> fraying a path for a much easier association the next time.

The ultimate weapon, of course, is the simple fact already alluded to: the will cannot be coerced. So, failing all else, and while working to extend a more regular empire through gradual development of the virtuous habits, the will can still hold out against noxious "commotions" in the body.

The most that the will can do while such a commotion is in its full strength is not to yield to its effects and to restrain many of the movements to which it disposes the body. For example, if anger causes us to lift our hand to strike, the will usually can hold it back.<sup>24</sup>

Descartes does not stop with these general considerations of the physiology of the passions and of the basic weapons the will can use in establishing and maintaining its control over the body; the more we know of the individual passions, their manifestations and elicitions, the more sure and subtle becomes the potential guidance of our lives. Consequently, in a Second Part of the *Treatise*, Descartes passes on to the definition of six genera of passions. While it lies beyond the scope



of this history to enter into the truly marvelous details of these descriptions, we can at least consider rapidly the principal genera and then turn to one particular passion, "generosity," which assumes enormous importance as a key instrument of the will's general control.

The genera of passions are distinguished according to "the many diverse ways our senses can be moved by their objects."<sup>25</sup> The first, "wonder," is the reaction caused by the sudden appearance of something that strikes us as new; the next, "love and hate," arise from a kind of union by anticipation with the object; the mode of all three being fundamentally that of the present; "desire," on the other hand, is of the future mode, a drive to be joined to that from which we are separated; "joy and sadness," following upon a definitive possession of a pain or sorrow, rather look to the past of what is an accomplished fact. With this brief table of distinctions to guide us, let us consider each primitive emotion in its turn.

The appearance of "wonder" at the head of the list admirably reinforces our point that Descartes in the *Treatise* is arguing for a human nature quite different from a disincarnated *cogito*. "Wonder is a sudden surprise of the soul which causes it to apply itself to consider with attention the objects which seem to it rare and extraordinary."<sup>26</sup> A disincarnated *cogito*, all wrapped up in contemplation of its innate ideas, would have no reason to be interrupted by the phenomenon of the body's surprise at an impression coursing across the brain, fraying a new way, unprepared by previous experiences—especially when we remember that the great agitation which surprise can cause is due precisely to this newness of its *physiological* course (Descartes compares it to the effect obtained from gently tickling a foot that is not accustomed to it); it "affects the brain in certain parts in which it is not usually affected, and the fact that these parts are more tender than those which a frequent agitation has solidified, increases the effect of the movement they there excite."<sup>27</sup>

This grossly physiological explanation points up an important consideration. Because Descartes gives such a great part to the body in our knowing processes, the will, as we have been emphasizing, must fight out the battle of control to an important degree on the corporeal level. Now we are seeing very concretely, in the case of one of the primitive emotions, what this can mean. The phenomena of attention and memory, both implicit in the reaction of wonder, have their corporeal aspect which must be taken into consideration when the will seeks to

command them. "Although a thing which was unknown to us presents itself anew to our understanding or to our senses, we do not for all that retain it in our memory, unless the idea we have of it is strengthened in our brain by some passion or else by the application of our understanding which our will determines to a particular attention and reflection."<sup>28</sup> Only attention can bring about retention of an object in the memory. This attention, or "strengthening" of the impression in the brain, can be commanded either by the will, working through the understanding, causing a motion in the brain, or by the movement of surprise. Without this latter, however, we could never learn anything new. If there were not provision for the body to react automatically—i.e., physiologically—when something new frays its path, the initial attention needed for retention, whether reinforced or not, would not occur, and we would be limited to learning only what our innate ideas could direct us to seek out.

On the other hand, the body must not be allowed to do the directing, so that we haphazardly follow all the vagaries of our wonder. To be without wonder is to be hopelessly "dull and stupid," that is true! But the most intelligent people are not necessarily those who are most disposed to "admiration"; those given to idle, unguided wonder are usually people who "have a fairly good supply of common sense, but at the same time have no high opinion as to their own sufficiency."<sup>29</sup> Descartes is not just calling attention to the sad case of the man of many hobbies, winner of quiz programs. He is applying ethically the metaphysics of ideas. If knowing is an active process, directed internally by the intimate resources of the understanding, then application to nature for knowledge must be judiciously structured by considerations drawn from the understanding itself. Parmenides had said it, in warning against getting too involved with the "many" and in insisting on absolute possession of the correct *hodos*; the Platonic epistemology is dominated by the same notion. In Bacon we found an echo of something similar when he recognizes that it is not enough to "observe" nature without a plan; rather, she must be made to yield up her secrets through being "vexed" by experiments. The Cartesian position is much more extreme than Bacon's. The real business of wisdom is with the clear and distinct innate ideas; observation and experiment help the soul take more explicit possession of its intimate resources, the innate ideas; these then direct subsequent inquiry. In the ethical realm, the same order prevails. Ultimate ends are to be sought among the innate ideas.

Wonder arising from practical experience can help us better discover them, but that experience itself must ultimately be directed by a knowledge higher than that yielded up by the senses.

Now that the passional presentation of the object has occurred, there arises attraction to or repulsion from it in the soul. "Love is an emotion of the soul caused by the movement of the spirits which incites it to join itself willingly to objects which appear to it agreeable."<sup>30</sup> Love, then, involves an estimate of suitability (which is of course not the same as wonder's estimate of novelty, but rather involves the anticipation of union) and a will to be one with the object. "By the word will I do not here intend to talk of desire, which is a passion apart, and one which relates to the future, but of the consent by which we consider ourselves from this time forward as united with what we love."<sup>31</sup> Being one by anticipation with its object, love is much calmer than desire, the great characteristic of which is precisely its aggressivity as it faces the future and attempts to overcome the gap separating the person from the desired object. "Desire agitates the heart more violently than any of the other passions and furnishes more spirits to the brain . . . which renders all the parts of the body more mobile."<sup>32</sup>

Ethics is above all concerned with the regulation of desire, not only because of its extremely explosive nature, but for a much more positive reason: It is through its intermediary that the other passions can move us.<sup>33</sup>

The most important distinction that can be made regarding the moral regulation of desire, declares Descartes, following Epictetus,<sup>34</sup> is that between desires whose accomplishment depends only on us and desires which depend only on other things. We cannot too much encourage the first, and we must strive diligently to dampen the second. The things that depend entirely on us constitute our true empire, that to which we should devote our attention exclusively. The vain desiring of that which depends on Providence, operating as a fate we cannot change, is nothing but an inauthentic distraction from our true pursuits.<sup>35</sup>

The key to this proper regulation lies in what we might call the great seventeenth-century virtue, "generosity."<sup>36</sup> Descartes again echoes Epictetus, "That true generosity which causes a man to esteem himself as highly as he legitimately can, consists partly in the fact that he knows that there is nothing that truly pertains to him but the free disposition of his will."<sup>37</sup> We recognize now that those individuals who give



themselves up to idle and vain admirations and who, consequently, can be said "to have no high opinion of themselves" lack the just and true view of the human condition which alone can keep us from becoming the prey of dangerous and futile desires. A man who has this just view recognizes that all men possess the powers of self-determination, of free will, and are, therefore, like himself, called "to do great things."<sup>38</sup>

Generosity is the passional movement in the body incited by the soul's possession of a true view of things, which brings with it necessarily a high "estimation" of oneself. Estimation is likewise a feeling, a movement in the body, disposing the spirits to incite us to sentiments corresponding to our true state. The status of Cartesian man is a highly Stoic one. He takes possession of his own kingdom, the realm of the will, precisely because he renounces the vainglorious attempt to possess the shadow kingdom of the material world. This Stoic sentiment is at the base of Descartes' rather passive attitude regarding the political situation. Presuming a Christian king and a fundamentally tolerable regime, Descartes would have us move in harmony with it, freeing the attention of the soul to dedicate itself to that pursuit of wisdom and virtue which is properly the will's province. As a result, the Cartesian hero is free to concentrate on being *maître chez lui*. A good sign of his victory is his command over fear and anger. Having "confidence in his virtue," the generous man need never submit to that vague *angoisse* directed at no particular object, the great nemesis of the man who cannot be sure of himself. And should he encounter an all too concrete reason for fright, a real and immediate menace to his life, he will be practiced in restraining himself from flight and in summoning up those noble reasons that, if there is grounds for doing it, will move him to stand up to the danger. As to anger, what for him can be the point of it? "Esteeming very little all those things that depend on others, he never gives so much advantage to his enemies as to recognize that he is hurt by them."<sup>39</sup>

"Joy" and "sadness" arising from union with a good or an evil are logically the last primitive passions to be considered. They do not deserve an important place in Descartes' consideration. The body's satisfactions are something to enjoy when they are legitimate; but they can so easily be superficial and ephemeral that it is better not to accord them much place. Actually, sadness is the more important of the two, for it warns us of the presence of things noxious to the body's survival. The main reason that desire, the aggressive emotion *par excellence*, and

generosity, the most important particular passion, occupy a much more important place than either joy or sadness is that our existence in this life is one of quest, not of final bliss. Descartes may have been very optimistic about the ultimate issue of the will's battle to control the passions. But he seems to have recognized that, even in the man of great and solid virtue, life would continue to issue new challenges calling for continued exercise of the greatest moral skill.

## Conclusion

THE ENDEAVOR of Descartes has not been in vain. His remains a great name in the history of mathematics. His physics was of doubtful value in the order of science; in the philosophical order, however, Descartes has popularized and defined with precision the ideal of a physics practically identified with mechanics, and although physics is much more than that, it is that to a very large extent, so much so that its secret desire might well always be to remain just that. Descartes has been the spokesman of the spirit of his time on still another point: like Francis Bacon, though in a less crude way, he openly declared man's ambition to render himself "master and possessor of nature." Like Bacon, he would find himself quite at home in our mechanized world. One sometimes thinks of the joy it would be to take him through some modern industrial plant and to let him see his own dreamland come true. The point is directly relevant to the history of philosophy because of the part industrialism will occupy in the mind of early-nineteenth-century philosophers.

In the history of culture, Descartes is now considered by some of our own contemporaries as representing what they call an anti-Renaissance or anti-humanistic movement. There is a great deal of truth in that view. Descartes considered wasted the time spent in learning Latin and other classical languages. Science, not literature, was what he was interested in. As one blessed with a good classical education, he could afford to despise it.

In the field of philosophy, his influence has been enormous; whether or not it always was to the good is not a question this history will attempt to answer. One thing at least must be said in his favor: The complete failure of peripateticism to provide a philosophy for the new world of science made it necessary for somebody to attempt it. Unlike

Bacon, Descartes did not consider it necessary to do away with metaphysics properly so called; on the contrary, under the influence of his mathematicism, he attempted a general deduction of the whole body of knowledge from metaphysical principles. In doing so, he never lost sight of what was to him a most important point: to provide science with a notion of matter in which nothing would resist a purely mechanical explanation. In this sense, the main object of the six *Meditations* is to establish that matter is nothing but geometrical extension, motion itself being a mere mode of extension.

In science proper, this resulted in a mechanicism without dynamics. In metaphysics, the famous mind-body distinction left the successors of Descartes with a frightening problem to solve. In anthropology, if man is made up of two really distinct substances, what kind of unity is his? In general metaphysics, if mind and extension are radically separate, how can they communicate? Nay, how can any substance communicate with any other one? This Cartesian problem of the "communication of substances" will dominate the philosophies of Malebranche, Spinoza, and Leibniz.